

trapezoidalis, pronoto marginibus rotundatis, disco ante marginem posticum tuberculo elevato armato. Hemelytra apicem abdominis paullo superantia, corio clavoque augustissimis. Pedes antici corporis dimidio vix longiores, femoribus ad basin biserialim setuloso-dentatis, trochanteribus haud dentatis, tarsis triarticulatis. Abdomen elongato-obovatum, marginibus reflexis.

Very like *Ploiaria*, Scop., differing only in the unreflexed side margins and tuberculate hind margin of the pronotum.

40. *Ploiariodes Whitei*, Bln., n. sp.

P. pallide ochraceo-brunnea, antennis, pedibus hemelytrisque dilutioribus, his fusco-brunneo maculatis, illis fusco-brunneo annulatis; pedibus subtilissime pilosis; antennis ♂ parce longipilosis.

♂ et ♀. Long. $6\frac{1}{2}$, lat. pronoti 1, lat. corp. postici $1\frac{2}{3}$ m. m.

Beaten from dead branches of trees at an elevation of about 4500 feet, on Mauna Loa, Hawaii.

BIBLIOGRAPHICAL NOTICES.

A Treatise on Comparative Embryology. By FRANCIS M. BALFOUR, M.A., F.R.S. Vol. I. Svo. London: Macmillan, 1880.

AMONG the numerous benefits for which zoologists must own their indebtedness to Mr. Darwin, one of the greatest is undoubtedly the impulse given, by the enunciation of his theory of the origin of species, to the study of the embryology of animals. Of course there were embryologists in pre-Darwinian times, and many of the facts revealed by them were among the most interesting offered for the contemplation of naturalists; but the doctrine of the origin of species by descent with modification immediately invested these facts with a new interest. There seemed to be at once a confirmation and a key given to that reproduction in developmental forms of the higher animals of the characteristics of more lowly organisms, which was long since, if somewhat vaguely, recognized. It was only natural to conclude that, if the different living types were genetically related, some trace of the line of descent ought to be found in the phases which they passed through between the first appearance of the embryo and its assumption of the adult form; and observation showed that in fact in many cases the ontogeny of the individual might fairly be regarded as furnishing an abridged sketch of the ancestral development or phylogeny of the species. Of course those naturalists who objected to the doctrine of the genetic evolution of organisms were free also to object to the phrases in which such conclusions as these are couched; but at the same time it must be admitted that the

phenomena of the geographical distribution of animals and their succession in geological time, whatever theory of their production we may adopt, are generally in accordance with the results of a theoretical genetic relationship. With the prevalence of such ideas a new significance was given to the phases through which animals pass in their progress to their perfect form; and it is hardly to be wondered at that the study of embryology, taken in its broadest sense, began to be followed with a zeal and energy of which we had no previous conception. The zoological laboratories which have been established in several favourable situations offered every facility for carrying on the most minute and elaborate investigations; individual students of course under such circumstances experienced an increased stimulus to exertion; and the result during the last fifteen years has been a perfect deluge of memoirs, of greater or less merit, treating of the developmental history of animals.

It is to the sifting and summarizing of this vast mass of material, aided by his own investigations, that Mr. Balfour has devoted an enormous amount of labour, the outcome of which is the volume whose title stands at the head of the present article, and for which all zoologists certainly owe him a deep debt of gratitude. The introduction of new ideas in connexion with embryonic development has resulted in such a multiplication of technical terms that many naturalists who have not made embryology their study must often find it difficult to understand the precise nature of the statements made and the arguments used in the discussion even of questions of systematic zoology; and to these Mr. Balfour's book will be an inexpressible boon. But this is the lowest point of view from which we can estimate its usefulness. As a philosophical summary of the results of embryological investigation it must be quite as highly appreciated.

Mr. Balfour commences with an Introduction, in which, after indicating the general purpose and scope of his work, he briefly describes the phenomena of reproduction and its different modes. He then proceeds to describe the nature and development of the ovum and spermatozoon, the maturation of the former and its impregnation, and the subsequent changes produced by segmentation &c. up to the period of the formation of the germinal layers. The general statements are illustrated by references to the phenomena presented by certain groups; and the whole constitutes an admirable sketch of the process of ovular development in the animal kingdom.

These chapters are followed by the section which constitutes the body of the work, systematic embryology, in which the author, after describing the general phenomena resulting in the formation of the germinal layers, and the broad differences in the mode in which this result is brought about, proceeds to describe seriatim the characteristics of embryonic development in all the great groups of the animal kingdom. Criticism of such work would be out of place; we can only say that, so far as we can see, all the most recent literature of

the subject has been laid under contribution, and the materials thus obtained worked up into a connected whole with great care and in the clearest and most intelligible manner. Mr. Balfour has appended to each section and subsection of his work a bibliography of the memoirs cited in it; and as these are cited throughout by consecutive numbers, he has reprinted all the separate bibliographies in a connected list at the end of the volume. This is exceedingly convenient for reference. The book is also freely illustrated with woodcuts, most of which are very good, and many of them beautifully executed.

In this first volume only the Invertebrata are treated of; the second, which we hope will not be long in making its appearance, will deal with the Vertebrate animals from the same phylogenetic point of view which is adopted in the present volume, and will also treat of another special department of the general subject, namely the evolution of organs. When completed, the book will certainly constitute one of the most important of recent contributions to the literature of zoology; and whether the author's fear that his attempt at a systematic exposition of the facts of embryology may be regarded in some quarters as "premature" proves to be well founded or not, we are quite sure that the gratitude of those to whom his book will be a perfect godsend will far outweigh any cavils that may be raised against it.

Memoirs of the Science Department, University of Tokio, Japan.
Vol. I. Part 1. *Shell-Mounds of Omori.* By EDWARD S. MORSE, &c. 4to. 36 pp., with 18 plates. Published by the University, Tokio, Japan. Nisshuska Printing-office. 2539 (1879).

THE Japanese have taken up the study of Archæology with warmth and earnestness. A native Archæological Society flourishes at Tokio, the Government interdicts the exportation of the antiquities of the country; and it is hoped that the ancient temples, monuments, gateways, idols, and tombs of Japan will be officially protected. Both from its many antiquities and the fidelity of its very ancient records of civilization and history (for nearly, if not quite, two thousand years), Japan is eminently favourable to the study of archæology. The enthusiastic pursuit of science in modern Japan, the institution of the University of Tokio, the advent of many first-class teachers of philosophy and science, and the cultivation of observing and thinking minds among the many willing native students, have given a high standing to all those connected with this state of progress among our scientific brethren in the North Pacific.

The Professor of Zoology at the University of Tokio, Mr. E. S. Morse, had ardently studied prehistoric shell-heaps in Maine and Massachusetts, U.S., for several years in company with Profs. Jeffries Wyman and F. W. Putnam; and he was not long in discovering a large shell-mound on the Yokohama railway at Omori, about six